

Manganese Health Research Program: Recent published literature

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Introduction

This report includes papers identified as being first published between March and May 2007. Bibliographic details are presented of recent literature addressing a number of research areas that are considered of direct relevance to the health effects of Manganese (Mn), and include:

Section 1 - EXPOSURE MEASUREMENT AND MODELLING: Papers relating to the measurements or modelling of environmental and occupational Mn exposure, the development of biomarkers of exposure or effect.

Section 2 - HEALTH EFFECTS: Papers on the influence of Mn on health, disease and dysfunction.

Section 3 - MECHANISMS: Papers on the physiological, biochemical and cellular mechanisms underlying the toxic effects of Mn.

Section 4 - HUMAN SUSCEPTIBILITY: Papers relating to assessment of the influence of genetic and epigenetic factors on human susceptibility to the effects of Mn.

Section 5 - TREATMENT AND IMAGING: Papers on the development and implementation of new medical approaches to the treatment of excessive Mn exposure.

Section 6 - MISCELLANEOUS: Other papers considered of interest or potential relevance to the study of the health effects of Mn.

The papers presented herein were identified using a series of structured searches of the following on-line databases: Medline, Toxline, Biological Sciences and Proquest Health. The paper abstracts were reviewed and categorised by an experience Scientist to confirm their relevance before inclusion in this report.

Future reports will present the literature published for the remainder of the year 2007–2008 at 3-monthly (quarterly) intervals.

1. EXPOSURE MEASUREMENT AND MODELLING

Asante, K.A., Agusa, T., Subramanian, A., *et al* (2007) Contamination Status of Arsenic and Other Trace Elements in Drinking Water and Residents from Tarkwa, a Historic Mining Township in Ghana. *Chemosphere*, 66(8), 1513-1522.

Bowler, R.M., Roels, H.A., Nakagawa, S., *et al* (2007) Dose-Effect Relationships between Manganese Exposure and Neurological, Neuropsychological and Pulmonary Function in Confined Space Bridge Welders. *Occupational and Environmental Medicine*, 64(3), 167-177.

Ericson, J.E., Crinella, F.M., Clarke-Stewart, K.A., *et al* (2007) Prenatal Manganese Levels Linked to Childhood Behavioral Disinhibition. *Neurotoxicology and Teratology*, 29(2), 181-187.

Nasolodin, V.V. & Gladkikh, I.P. (2007) [Manganese Provision in Trained and Untrained Schoolchildren and Students in Different Seasons]. *Gigiena i Sanitariia*, (1), 59-61.

Signorile, G., Neve, A., Lugoli, F., *et al* (2007) Evaluation of Toxic Chemical Parameters and Ecotoxicity Levels in Bottled Mineral Waters. *Journal of Preventive Medicine and Hygiene*, 48(1), 10-16.

Wirth, J.J., Rossano, M.G., Daly, D.C., *et al* (2007) Ambient Manganese Exposure is Negatively Associated with Human Sperm Motility and Concentration. *Epidemiology*, 18(2), 270-273.

2. Health effects

Bowler, R.M., Roels, H.A., Nakagawa, S., *et al* (2007) Dose-Effect Relationships between Manganese Exposure and Neurological, Neuropsychological and Pulmonary Function in Confined Space Bridge Welders. *Occupational and Environmental Medicine*, 64(3), 167-177.

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Hong, Y-C., Hwang, S-S., Kim, J.H., *et al* (2007) Metals in Particulate Pollutants Affect Peak Expiratory Flow of Schoolchildren. *Environmental Health Perspectives*, 115(3), 430-434.

Meral, H., Kutukcu, Y., Atmaca, B., *et al* (2007) Parkinsonism Caused by Chronic Usage of Intravenous Potassium Permanganate. *Neurologist*, 13(2), 92-94.

Wirth, J.J., Rossano, M.G., Daly, D.C., *et al* (2007) Ambient Manganese Exposure is Negatively Associated with Human Sperm Motility and Concentration. *Epidemiology*, 18(2), 270-273.

3. Mechanisms

Anderson, J.G., Cooney, P.T. & Erikson, K.M. (2007) Inhibition of DAT Function Attenuates Manganese Accumulation in the Globus Pallidus. *Environmental Toxicology and Pharmacology*, 23(2), 179-184.

Baek, S.Y., Kim, Y.H., Oh, S.O., *et al* (2007) Manganese does Not Alter the Severe Neurotoxicity of MPTP. *Human and Experimental Toxicology*, 26(3), 203-211.

Barlow, B.K., Cory-Slechta, D.A., Richfield, E.K., *et al* (2007/0) The Gestational Environment and Parkinson's Disease: Evidence for Neurodevelopmental Origins of a Neurodegenerative Disorder. *Reproductive Toxicology*, 23(3), 457-470.

Erikson, K.M., Dorman, D.C., Lash, L.H., *et al* (2007) Manganese Inhalation by Rhesus Monkeys is Associated with Brain Regional Changes in Biomarkers of Neurotoxicity. *Toxicological Sciences*, 97(2), 459-466.

Guo, X-P., Huang, G-X. & Wu, Q. (2007) Effect of Manganese on Growth of HUVEC-304 Cells and Expression of Caspase. *Chinese Journal of Public Health*, 23(1), 110-111.

Gwiazda, R., Lucchini, R. & Smith, D. (2007) Adequacy and Consistency of Animal Studies to Evaluate the Neurotoxicity of Chronic Low-Level Manganese Exposure in Humans. *Journal of Toxicology and Environmental Health - Part A*, 70(7), 594-605.

Huang, X., Wu, Q., Guo, X-P., *et al* (2006) Effects of Manganese on the Growth of HUVEC-304 Cells and the Expressions of p53, p21 Proteins. *Chinese Journal of Industrial Medicine*, 19(6), 328-330.

Kobayashi, K., Kuroda, J., Shibata, N., *et al* (2007) Induction of Metallothionein by Manganese is Completely Dependent on Interleukin-6 Production. *Journal of Pharmacology and Experimental Therapeutics*, 320(2), 721-727.

Miller, K.B., Caton, J.S. & Finley, J.W. (2006) Manganese Depresses Rat Heart Muscle Respiration. *BioFactors*, 28(1), 33-46.

Prestifilippo, J.P., Fernández-Solari, J., Mohn, C., *et al* (2007) Effect of Manganese on Luteinizing Hormone-Releasing Hormone Secretion in Adult Male Rats. *Toxicological Sciences*, 97(1), 75-80.

Wei, N., Cai, X-L. & Li, X-S. (2007) [Effects of Manganese Chloride on Exponent of Birth and Quantity of Seminiferous Epithelium Cell of Mice]. *Chinese Public Health*, 23(3), 337-338.

4. Human susceptibility

No relevant papers identified.

5. Treatment and imaging

No relevant papers identified.

6. Miscellaneous

Hu, H., Shine, J. & Wright, R.O. (2007) The Challenge Posed to Children's Health by Mixtures of Toxic Waste: The Tar Creek Superfund Site as a Case-Study. *Pediatric Clinics of North America*, 54(1), 155-175.